

"Comparator For Time-Temperature Indicator"

NA-1147C

The Listing of claims will replace all prior versions, and listing, of claims in the application.

LISTING OF CLAIMS

Claim 1. (Currently Amended) A comparator for use with a time-temperature indicator, said indicator for external monitoring of a time-temperature exposure [history] of a product, said exposure [history] having [a] an exposure reference of 80°F over three years, whereby said [history] exposure may vary such that as the temperature increases, the time decreases, and as the temperature decreases, the time increases, the time-temperature indicator having an active portion having an initial color [and] which undergoes chemical changes as time elapses and at a rate related to the temperature of the surrounding environment wherein the chemical changes produce changes in the color of the active portion, the comparator having a predetermined color that is the cumulative equivalent to 80°F over three years, the comparator comprising:

a supporting member;

a plurality of comparator stages located on the support member, each comparator stage

comprising a first portion having a reference color and a second portion having a

predetermined color that is the same as one of the colors to which the active

portion of the time-temperature indicator changes, the colors of the second

portions of the comparator stages darkening in a progressive manner such that the

predetermined color of the second portion of a first one of the comparator stages

is substantially lighter than the reference color of the first stage and the

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predetermined color of the second portion of a last one of the comparator stages is substantially darker than the reference color of the last comparator stage; information describing a condition of said product at each comparator stage; indicia means located on the support member to facilitate identification of each stage, said indicia means corresponding to a condition of said product at a said stage as described by the information; and means for storing said information; whereby a user of the comparator compares the color of the active portion of the time-temperature indicator to each comparator stage to determine if the color of the active portion is the same as the color of the second portion of any of the comparator stages; and whereby said user correlates the indicia of the stage, having the same color as said active portion, with said storing means for accessing information corresponding to the indicia for determining the condition of the product; said comparator for determining an amount of color that has developed in the time-temperature indicator, based on the exposure reference of 80°F for three years as an appropriate shelf life of the product, said product being for example a military ration, such exposure reference representing a point between binary conditions of the product, said first condition being prior to the point and being positive and said product being usable, and said second condition, being after the point and being negative and said product having uncertain use by passing such point as a result of deterioration of the product;

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said comparator being of a design having a hue and color saturation of the colors of the active portion of the time-temperature indicator, and for comparison of the colors, said comparison using a densitometer-like instrument for measurement of optical density of the color saturation.

Claim 17. (Currently Amended) A method of determining the time-temperature condition of a food product having applied thereto a time-temperature indicator, the indicator having an active portion having an initial color [and] which undergoes chemical changes as time elapses and at a rate related to the temperature of the surrounding environment, said time and temperature having a reference of 80°F over three years, whereby said time and temperature may vary such that as the temperature increases the time decreases, and as the temperature decreases, the time increases, wherein the chemical changes produces changes in color of the active portion, the method comprising the steps of:

(a) providing a comparator having a predetermined color that is the cumulative equivalent to 80°F over three years, the comparator comprising support member, and a plurality of comparator stages located on the support member, each comparator stage comprising a first portion having a reference color and a second portion having a predetermined color that is the same as one of the colors to which the active portion of the time-temperature indicator changes, the colors of the second portions of the comparator stages darkening in a progressive manner such that the predetermined color of the second portion of a first one of the comparator stages is substantially lighter than the reference color of the first stage and the predetermined color of the second portion of a last one of the comparator

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stages is substantially darker than the reference portion of the last comparator stage;

(b) comparing the color of the active portion of the time-temperature indicator to the predetermined color of the second portion of each comparator stage;

(c) selecting the comparator stage having the second portion with the predetermined color that matches the color of the active portion of the time-temperature indicator;

(d) storing information describing a condition of the product, each condition being identified by an indicia identifying the condition of the product at a particular stage;

(e) correlating the indicia of the selected comparator stage to a particular condition of the product; and

(f) retrieving said stored information describing the condition of the product at the selected comparator stage; said comparator for determining an amount of color that has developed in the time-temperature indicator, based on the exposure reference of 80°F for three years as an appropriate shelf life of the product, said product being for example a military ration, such exposure reference representing a point between binary conditions of the product, said first condition being prior to the point and being positive and said product being usable, and said second condition being after the point and being negative and said product having uncertain use by passing such point as a result of deterioration of the product; said comparator being of a design having a hue and color saturation of the colors of the active portion of the time-temperature indicator, and for comparison of the

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colors, said comparison using a densitometer-like instrument for measuring
optical density of the color saturation.